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WITNESS my hand this  
Ninth day of August 2004

*J. Billingsley*

JULIE BILLINGSLEY  
TEAM LEADER EXAMINATION  
SUPPORT AND SALES

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## DEVICE FOR ARRANGING A POST IN POSITION

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The present invention is related to a device for enabling arrangement of a replaceable item, such as a post, for example a road sign or a guide-post, in position; to an assembly comprising such a device, and to a method for arranging in place such a sign.

10

It has been estimated that some 70 million guideposts, or delineators, are used on Australian roads.

15

Most of these guideposts are made of timber. Such timber guideposts require holes to be dug in the ground in order to install the guideposts correctly in position. A correct excavation of such holes and the subsequent correct positioning of the timber guideposts requires a great deal of skill and man hours.

20

Furthermore, once such a timber guidepost is accidentally hit by a vehicle they are usually broken and rendered useless. Thereafter the stump of the broken guidepost has to be dug out, a new hole dug and a new guidepost arranged in this new hole in order to position a new guidepost correctly. This is a costly and time consuming exercise which requires a great deal of skill and experience.

25

Roll formed steel sections have also been introduced as guideposts. However once a steel section is hit by a vehicle, the guidepost is often rendered practically useless as the steel section can be severely twisted beyond repair. In such instances the steel section needs to be totally replaced.

30

According to a first aspect, the present invention provides a device enabling arrangement of a replaceable item, such as a road sign or a guide post, in particular flexible, plastic extruded guideposts, at a pre-determined position, the device comprising arranging means for arranging the item in position, whereby the arranging means have such a form as to facilitate insertion thereof into the ground.

The device preferably comprises a support element for supporting the replaceable item in the device, and may further comprise anchoring means for anchoring the device in position, whereby preferably the arranging means and the anchoring means are formed from one or more stake-like elements, each of which

may have a substantially pointed end, to facilitate insertion of the device into the ground, which pointed end can taper outwardly to be continuous with a body of the stake.

5 The support means for the replaceable item may comprise a female channel or sleeve which corresponds with a male portion of the replaceable item, whereby preferably the support means extend between two of the stake elements and can be integral with the stake elements.

10 Furthermore the device can comprise locking means for locking the replaceable item in position which locking means may, for example, comprise a resistive lug associated with the male portion of the replaceable item, which lug can be releasably lockable with a catch, associated with a female portion of the support sleeve.

The device may also comprise reinforcing means for reinforcing and strengthening the device.

15 Moreover, the device may also comprise stabilising means for stabilising thereof once arranged in position and stabilising for reinforcing the device.

In a preferred embodiment, the device is equipped with two stakes wherebetween an integral support sleeve for a guide post is mounted. An imaginary plane substantially encompasses both stakes and the support sleeve.

20 The present invention thus enables an easy and quick arrangement in position of a road sign for example, simply by thumping the device into the ground and locking the road sign in position within the device.

25 Furthermore, if the road sign is hit and damaged, the road sign may simply be removed from the device, which remains in position in the ground, whereafter a new road sign is simply slid into the device, already into position, and locked into place therein.

30 A related aspect of the present invention concerns an assembly comprising a device as referred to above and a replaceable item, such as a road sign or guide post supportable in the device. Preferably the replaceable item is a road sign, releasably affixed to the device.

A further related aspect of the present invention concerns a kit, which kit comprises the device and/or the assembly, as referred to, and a driving tool for facilitating driving of the device into the ground.

The driving tool is preferably equipped with a male interlocking member, which may depend from a driving face of the driving tool, which member is coupleable with the female sleeve of the arranging device in use.

5 The kit preferably also comprises an extractor, for extracting the device from the ground when desired.

Yet another related aspect of the present invention is concerned with a method for affixing a road sign, for example, in position, comprising the step of inserting the device into the ground, and subsequently affixing the road sign to the device.

10 The invention will now be described by way of the following specific description, with reference to the figures, wherein:

Figure 1 is a perspective view of a preferred embodiment of the device according to the present invention;

15 Figure 2 shows a partially cut away perspective view of a second preferred embodiment of the device according to the present invention;

Figure 3 shows a perspective view of an assembly according to the present invention whereby the device from figure 1 is provided with a signpost affixed thereto, whereby a screwdriver blade is also shown which can effect release of the signpost from the device;

20 Figure 4 shows another embodiment of the device according to the present invention, for providing a ground cavity;

Figure 5 shows a perspective view of a driving tool according to the present invention for driving the device into the ground;

25 Figure 6 shows a partially exploded front view of another preferred embodiment of the assembly according to the present invention;

Figure 7 shows a rear view of the assembly shown in figure 6;

Figure 8 shows a further partially exploded perspective view of an alternative embodiment of the present invention;

30 Figure 9 shows an alternative preferred partially exploded view of an assembly according to the present invention as does Figure 10;

Figure 11 shows a partially cut away exploded perspective view of the assembly according to the present invention arranged in position in the ground; and

Figure 12 shows a side view of the assembly according to the present invention illustrating how a road sign repositions itself correctly following vehicle impact.

5 Figures 13 and 14 show technical drawings of preferred embodiments of the device according to the present invention, detailing dimensions thereof.

Figure 15 shows technical drawings, illustrating dimensions, of a post according to the present invention.

10 A device 1 according to the present invention (figure 1) has two oppositely arranged tapered stakes 2, 4, which are separated by a body section 5 containing a support sleeve 6 for a guide post extending therebetween.

The support sleeve 6 is provided with a slightly curved, in longitudinal section, female channel 8, which corresponds in form to the circumferential profile of a guidepost 10 arrangeable in the female channel 8 of the device 1.

15 The support sleeve 6 is provided with a square opening 12 arranged in a front face 14 of the sleeve 6. This square opening 12 functions as a retaining, catch area which interlocks with a protruding correspondingly square shaped lug 16 arranged on a front face 18 of the guidepost 10.

20 The stakes 2, 4 are each provided with three roughly equidistantly arranged reinforcing ribs 20, which in cross section provide a star like form, which extend outwardly from the stakes and each taper down to a pointed tip 22 of the stakes 2, 4.

25 The support sleeve 6 is also provided with four reinforcing ribs, two of which 24, 26 are arranged to depend from an upper edge 28 of the device to a lower edge 30 of the support sleeve 6 on either side of the square opening 12 and two of which 32, 34 are arranged correspondingly on a rear face of the support sleeve 6.

In an alternative embodiment (not shown), the front and rear sleeve reinforcing ribs are continuous and extend around the lower edge of the support sleeve.

30 The female channel 8 is strengthened by moulding a radii 36 into an upper edge of the body 5 surrounding the channel 8. This radii, being preferably 2-3mm, prevents the signpost from creasing at ground level should a vehicle tyre drive directly thereover.

In an alternative embodiment, not shown, the radii can be replaced or supplemented by a 'doughnut' shaped replaceable impact absorber.

The device can have a length of 220mm.

Known devices for supporting signposts have a length of 440 mm.

5 It is a requisite that guideposts extend 900mm above the ground. Utilising the present invention, only 100 mm of the guide post need be enclosed by the device in order to obtain a very stable support, however, the known devices must encase at least 400 mm of guidepost to obtain the same degree of support. As such, the present invention also provides a substantial saving in material and costs.

10 The device is preferably made of plastic, but any suitable material, for example steel, may be used.

An alternative embodiment of the device is shown in figure 2, whereby the stakes are provided with two tapered profiled rib sections 16, 17 instead of three as exhibited in figure 1.

15 The guide post 10 can be slid into the female channel 8 of the device 1 and affixed thereto by means of clicking the retaining lug 16 through the square retaining opening 12 of the front face of the support sleeve 6 as shown in figure 3.

20 The female channel 8 of the support sleeve 6 is bounded, at the ends terminating in the stakes, see figure 1, by two roughly circular cross-sectional profiles, each having a diameter greater than the diameter of the main channel, in which circular sections two integral circular cross-sectional, longitudinal profiles of the guidepost 10 are arrangeable, see also figure 3.

The support sleeve 6 preferably has a wedged outer surface which also reduces the friction when driving the device into the ground.

25 In use, the device 1 is firstly hammered into the ground, whereafter a guidepost 10 is inserted and fixed therein as described above.

The strengthening ribs 20, 24, 26, 32 and 34 enable an effective distribution of the impact load on thumping the device into the ground and also provide an effective reinforcement for the device.

30 An alternative embodiment of the device according to the present invention is shown in figure 4.

This has a form which generally corresponds with the form of the device

as shown in figures 1 and 2, but is not provided with a female channel for receipt of a guide post, and is furthermore provided with an integral driving rod 45.

5 This embodiment of the device 44 can be hammered into the ground to provide a cavity which generally corresponds in form to the exterior profile of the device as shown in figures 1 and 2, whereafter an embodiment of the device as shown in figures 1 and 2 for example can be inserted into this cavity, after removal of the device 44, to effect replacement of a guidepost.

10 This embodiment of the device 44 is most preferably used in hard ground, and most preferably covers at least 70% of the area of an embodiment of the device provided with a female channel for receipt of a guide post 10.

A driving tool 38 (figure 5) can be used for thumping the device into the ground.

15 This driving tool 38 is provided with a male member 40, which in cross-section has the same form as the guidepost 10, which male member 40 couples into the female channel 8 of the device 1 and is displaceable therein.

Integral with the male member 40 of the driving tool is a backstop 42 which, when the male member 40 is inserted into the female channel 8, sits on top of the device 1 and transmits driving force through to the device 1 when the latter is thumped into the ground.

20 The driving tool 38 and founding tool 44 can be used in conjunction with a post thumper, or a jackhammer to drive the device into the ground.

The backstop 42 enables the device to be driven into the ground, level with the surface thereof, and furthermore enables an even distribution of the driving load through the device 1.

25 The male member 40 of the driving tool 38 ensures that the female channel 8 is not damaged or misshapen on thumping of the device 1 into the ground.

In use, the device is driven fully into the ground whereafter a guidepost 10, preferably made from extruded flexible plastic is fitted into the channel 8 of the device and locked into position by means of the lug 16 and the catching opening 12.

30 Once the guidepost 10 is affixed in position in the device 1, should this subsequently be needed to be removed for any reason, the lug 16 can simply be released by a screwdriver S (figure 3) whereafter the guidepost 10 can be withdrawn from the support sleeve 6 of the device 1.

Ribs 26 and 24 provide a guiding channel for easy access of the screwdriver S to the lug 16.

As such, guide posts such as those common on long stretches of unlit roads in Australia, can be easily and quickly arranged in position and replaced when  
5 necessary.

A red reflector R may be arranged on a front face of the guidepost whilst a white reflector W may be arranged on the rear face thereof, see figure 11 for example.

Once assembled in position, any flexing of the guidepost will take place  
10 at ground level as shown in figure 12.

The guidepost 10 can thus automatically resume its upright position following vehicle impact therewith for example.

An alternative embodiment of the device is shown in figures 6 and 7 and consists of two steel stakes 50 and 52 which are separated by an integral steel  
15 plate section 54 extending therebetween.

An upper edge of the steel plate is shaped to terminate in roughly L shaped profiles, 55, continuous with the stakes 50-52.

Riveted on the rear, is a separate backing plate 56 which together with the steel part 54 provides the female channel 57 in which the guidepost 58 is  
20 receivable. This backing plate has a folded in portion such that when attached to the front plate, a wedge effect is provided to the bottom portion of the centre piece in order to facilitate ground penetration.

This embodiment of the device can be driven into the ground in the same manner as described previously, or alternatively with a mallet.

Another alternative is shown in figure 8, whereby the device 60  
25 comprises two substantially rounded stakes 62, 64 which have tapered pointed ends 66.

A separating element 68, is held in position by, and between the stakes, just above the tapered ends 66 in an internal U shaped in x-section channel 70  
30 arranged in each stake to run the length thereof to terminate just above the pointed ends 66.



In the embodiment shown, the separating element 68 is formed from two envelope sections 72, 74 which can be separately mounted in the respective channel sections 70 of the respective stakes 62, 64.

5 The stakes 62, 64 in use, are hammered into the ground by means of a  
mallet M whereafter the guidepost G, provided with ears 76 and mounted thereon  
upwardly facing lugs 78, is pushed down through the channels 70 so that a main  
body of the guidepost G fits into an envelope E formed from the separating element  
68. The stakes can be hammered in by hitting first one, then the other, stake as  
alternate hits or can be simultaneously driven into the ground by a suitable driving  
10 tool. The middle section creates a void in the ground as it travels therethrough. The  
assembly remains in one piece. A kinked piece of wire run down the side of the stake  
can be used to release the catch faces, when the wire is twisted and raised.

A further embodiment of the present invention is shown in figure 9.

15 In this embodiment two separate tapered stakes 80 and 82, each  
provided with an identical profiled section 84 which corresponds both with a  
guidepost G, equipped with external locking latches 86 which lock into these profiles  
84, and a male element 88 of a driving tool 90.

20 In use, the profiles 84 of the stakes 80, 82 are arranged in position on  
an underside of the driving tool 90 and driven into the ground thereby, whereby the  
male member 88 of the driving tool 90 also creates a ground cavity into which the  
post G can fit on removal of the driving tool 90.

Catch faces 92 on the ears 86 of the post G fit into corresponding catch  
recesses 94 on the two stakes 80, 82.

25 A further embodiment of the assembly according to the present  
invention is shown in figure 10, whereby two wire stakes 100, 102, are driven into the  
ground by a corresponding driving tool 104 in a manner similar to that described for  
the embodiment as shown in figure 9.

30 In a manner similar to that described for the embodiment shown in  
figure 9, upper sections of the wires 106, which have been bent back on themselves,  
provide 'hooks' whereon appropriate catches arranged on a guidepost are fixable,  
whereby the form of the driving tool punches a guide-post cavity into the ground.

It will be realised that the foregoing is by way of description only, the  
scope of the invention being determined by the following claims.

**THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:**

1. Device for enabling arrangement of a replaceable item, such as a road sign, at  
5 a pre-determined position, the device comprising:
  - arranging means for arranging the item in position, whereby the arranging means have such a form as to facilitate insertion thereof into the ground.
2. Device according to claim 1, further comprising a support element for  
10 supporting the replaceable item in the device.
3. Device according to claims 1 or 2 further comprising anchoring means for anchoring the device in position.
- 15 4. Device according to any of the preceding claims wherein the arranging means and/or the anchoring means are formed from one or more stake-like elements.
5. Device according to claim 4, wherein the stakes each have a substantially pointed end, to facilitate insertion of the device into the ground, which pointed end  
20 tapers outwardly to be continuous with a body of the stake.
6. Device according to any of the preceding claims, wherein the support means for the replaceable item comprises a female channel or sleeve which corresponds with a male portion of the replaceable item, which female channel is preferably  
25 continuous with a radii.
7. Device according to any of the preceding claims wherein a main body thereof extends between the stake elements and wherein the radii from claim 6 is comprised in the body, which radii is sufficient to prevent crumpling of the body.  
30
8. Device according to claim 7, wherein the pointed ends of the stakes extend from the body.

9. Device according to claims 7 or 8 wherein the support sleeve is contained in the main body.

10. Device according to claims 7 or 8 or 9, wherein the body is integral with the stake elements wherebetween it extends.

11. Device according to any of the preceding claims further comprising locking means for locking the replaceable item in position within the device.

12. Device according to claim 11, wherein the locking means comprise a resistive lug associated with the male portion of the replaceable item, which lug is releasably lockable with a catch, associated with a female portion of the support sleeve.

13. Device according to any of the preceding claims further comprising reinforcing means for reinforcing the device.

14. Device according to claim 13 wherein the reinforcing means comprise one or more profiled ribs, which extend outwardly from the device.

15. Device according to any of the preceding claims, equipped with two stakes wherebetween the integral support sleeve for a guide post is mounted, whereby an imaginary plane substantially encompasses both stakes and the support sleeve.

16. Assembly comprising a device according to any of the preceding claims, and a replaceable item, such as a road sign, supportable in the device.

17. Assembly according to claim 16, wherein the replaceable item is a road sign, releasably affixed to the device.

18. A kit comprising a device according to any of the preceding claims 1-15 and/or the assembly according to claims 16 or 17 further comprising a driving tool for facilitating driving of the device into the ground.

19. Kit according to claim 18, wherein the driving tool is equipped with a male interlocking member, which may depend from a driving face of the driving tool, which member is coupleable with the female sleeve of the arranging device.

5 20. Kit according to claims 18 or 19, further comprising an extractor, for extracting the device and/or assembly from the ground.

10 22. A driving tool for facilitating driving a device according to any of the claims 1-15 into a surface, such as the ground, the tool comprising a driving face, arrangeable on a corresponding face of the device, a male interlocking member, depending from the driving face of the driving tool, which member is coupleable with the female sleeve of the arranging device and an impact area, for receiving driving force.

15 23. An extractor for extracting a device according to any of the claims 1-15 or an assembly according to claims 16 or 17 from a surface, for example the ground, the extractor comprising holding means for holding the device during the extraction thereof.

20 24. Method for affixing a replaceable item, such as a road sign, to the ground at a predetermined position, the method comprising the steps of inserting a device according to any of the preceding claims 1-15 into the ground, and affixing the replaceable item to the device.

25 25. Method according to claim 24, wherein the device is driven into position in the ground with the aid of a driving tool according to claim 22.

30 26. Method according to claims 24 or 25, wherein replacement of the item is effected by removing the item from the device and subsequently inserting a new item into the device, whilst the device remains in its predetermined position in the ground.

27. Method according to any of the claims 24-26, wherein, following use, the device is extracted from, for example the ground, with the aid of an extractor according to claim 21.

5 28. Use of an assembly according to claims 16 or 17 for providing route information, in particular for marking the route's progress.

29. Signpost having such a form as to be releasably fixable to a device according to any of the claims 1-15.

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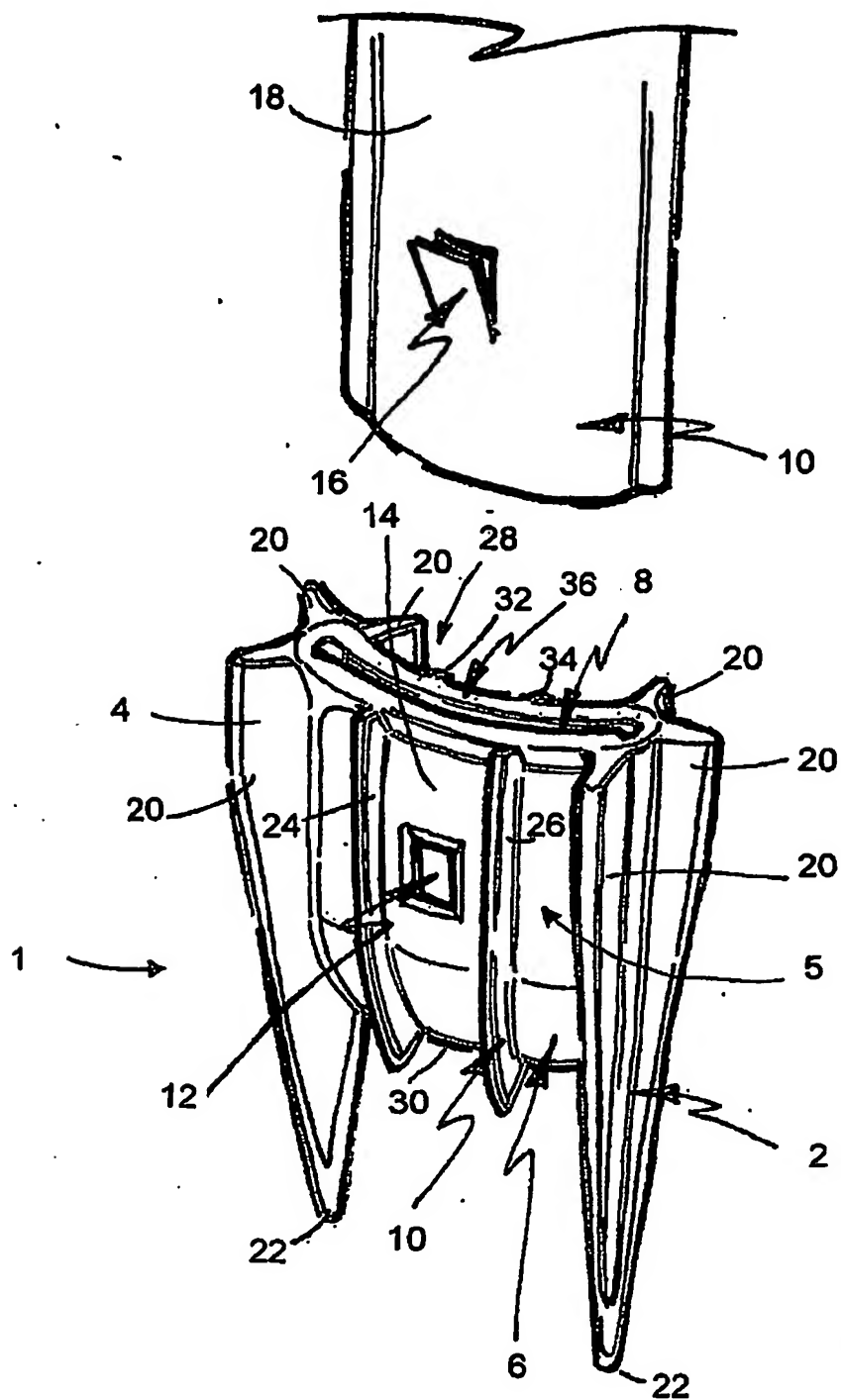


FIG. 1

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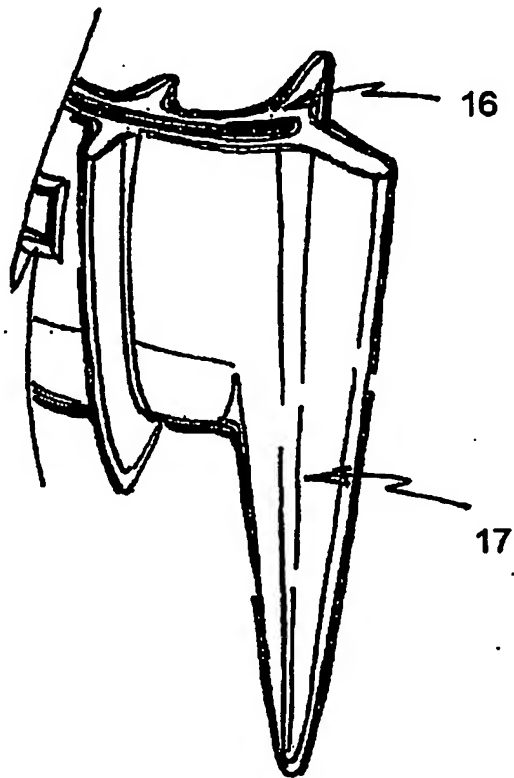


FIG. 2

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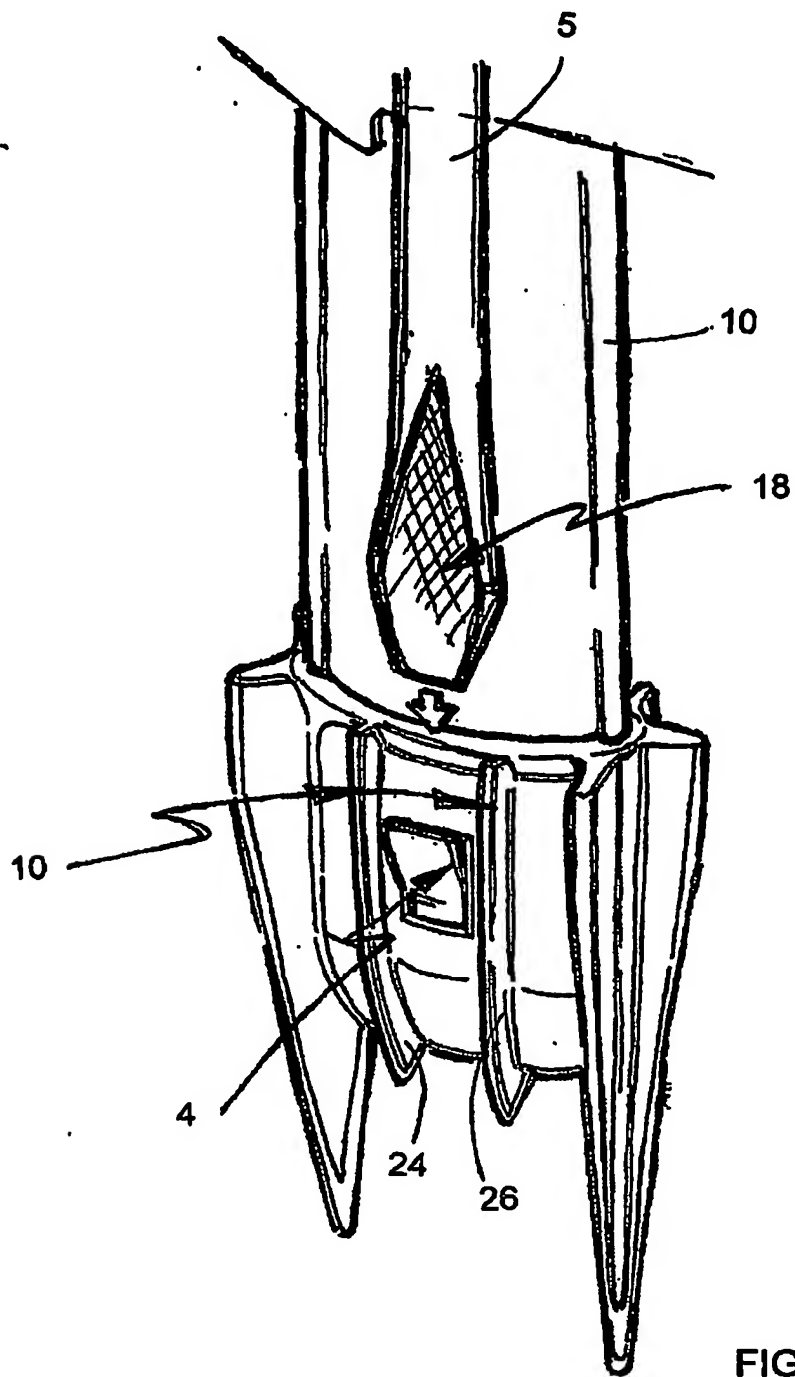
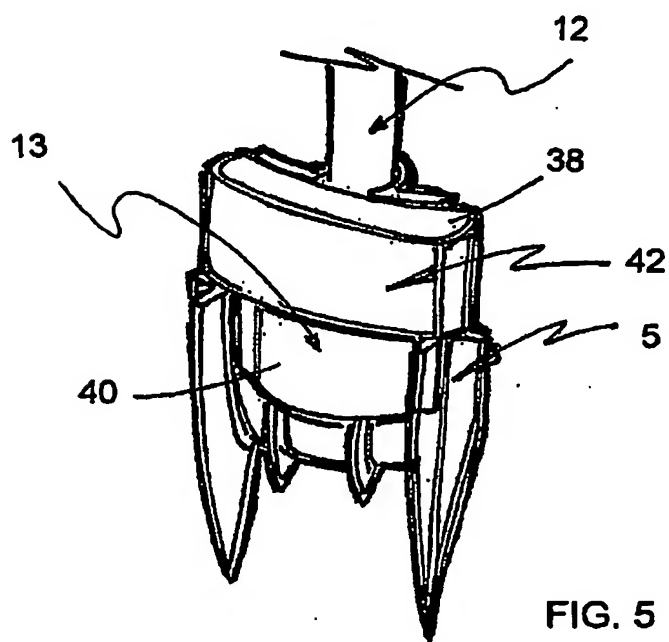
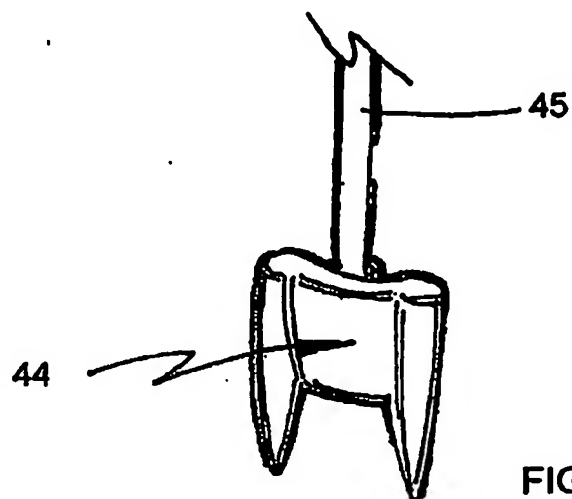
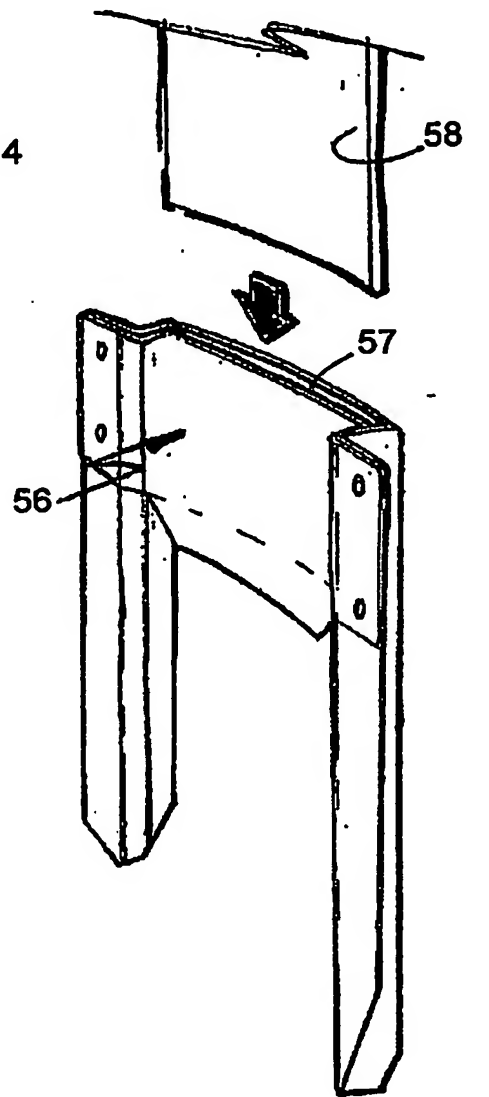
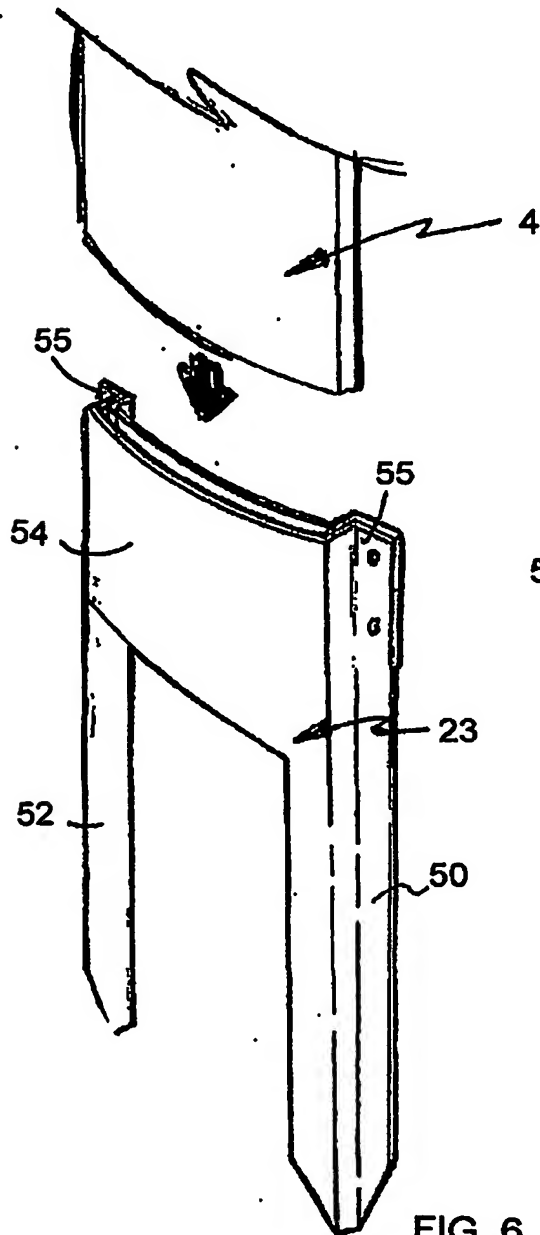


FIG. 3



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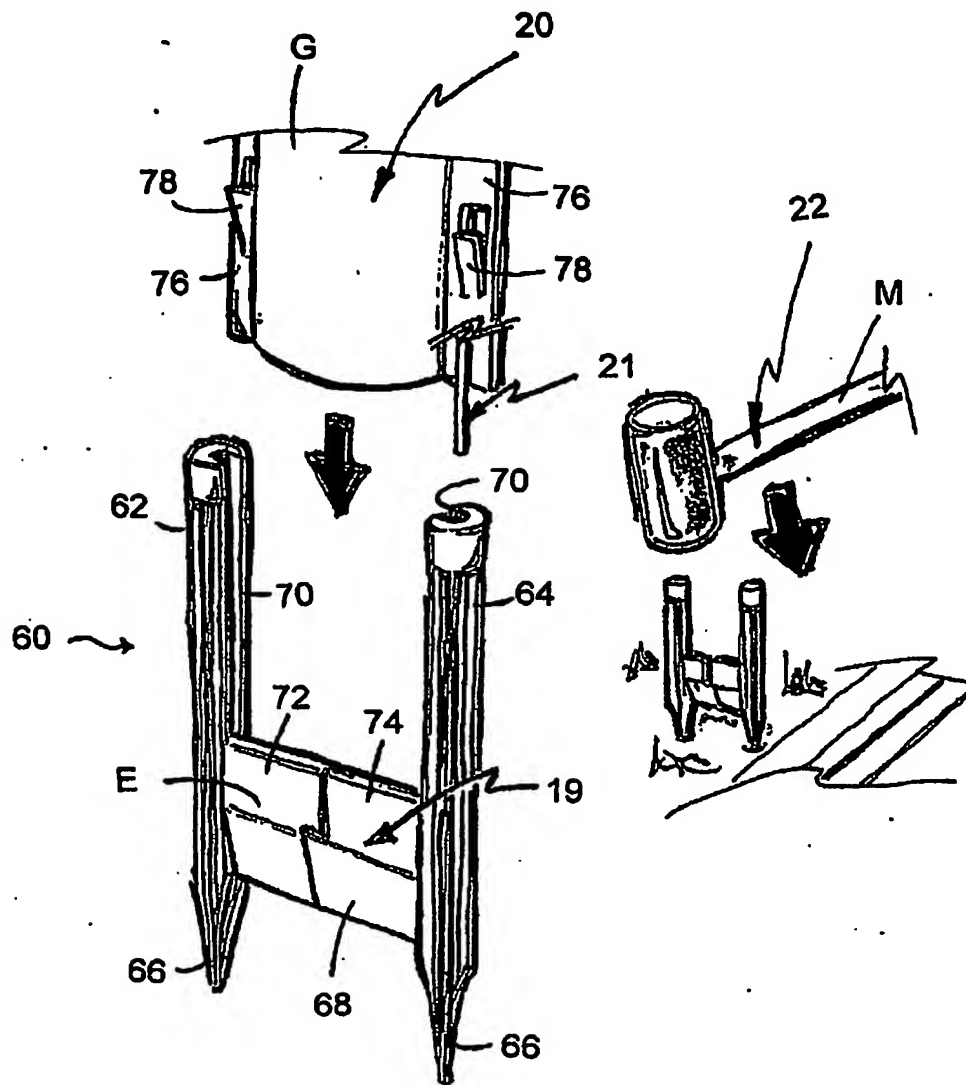


FIG. 8

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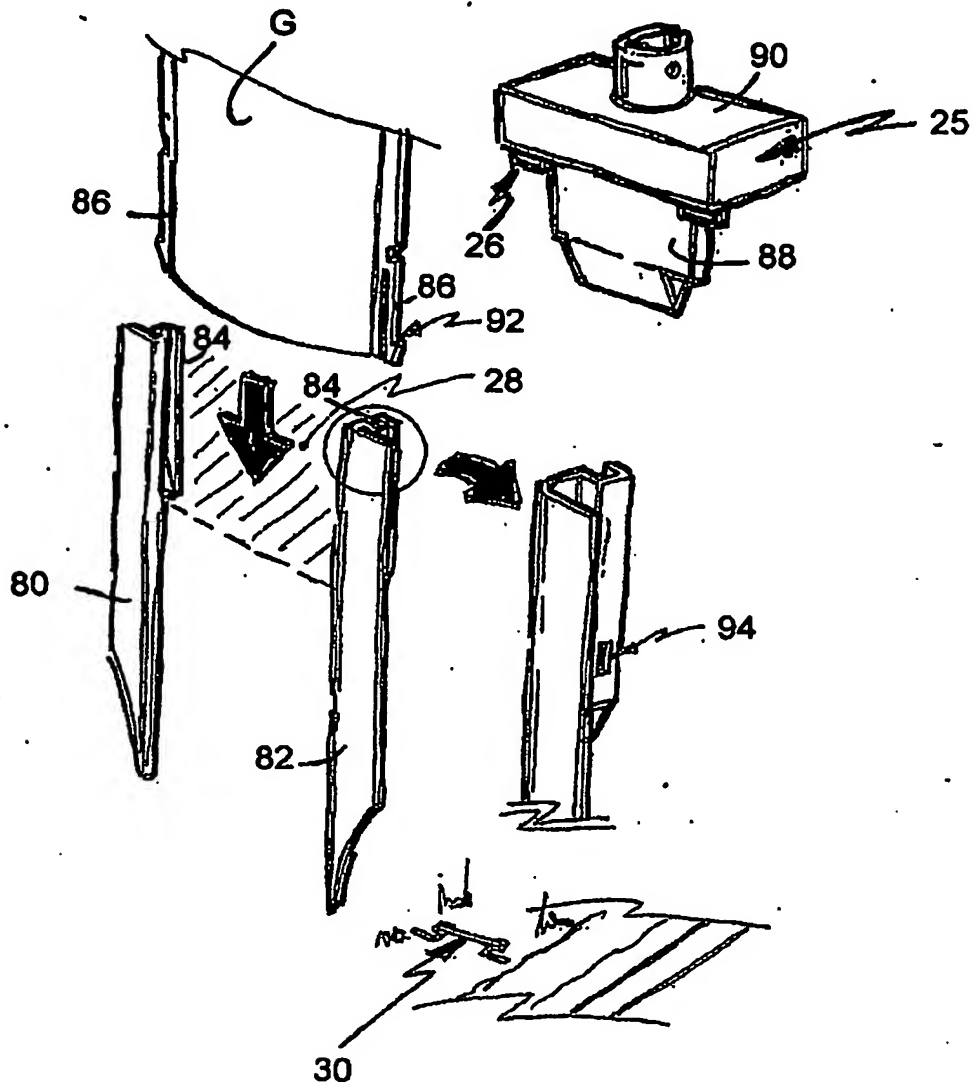


FIG. 9

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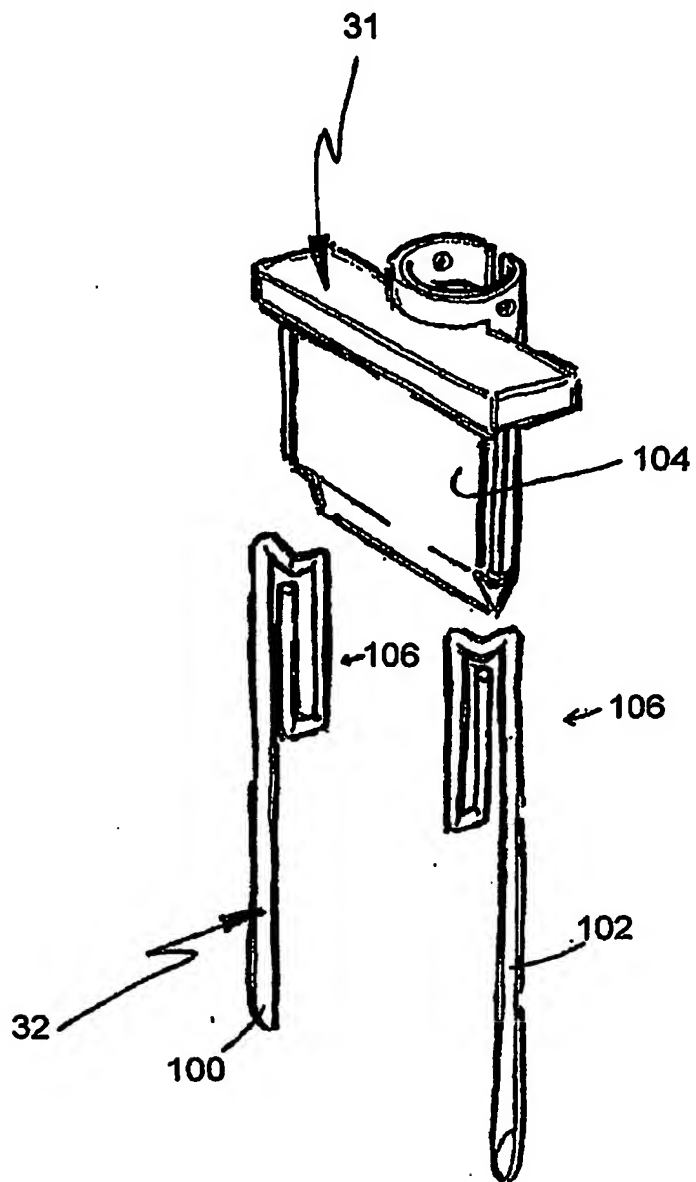


FIG. 10

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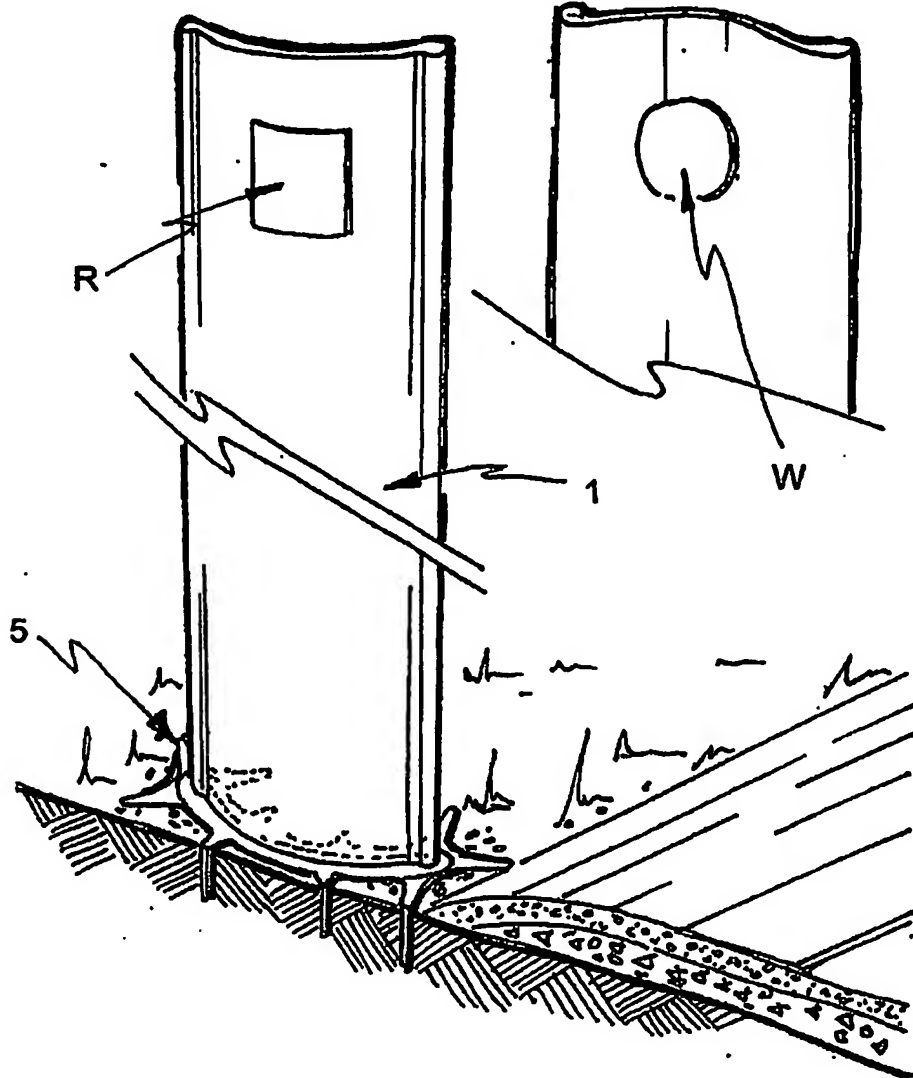


FIG. 11

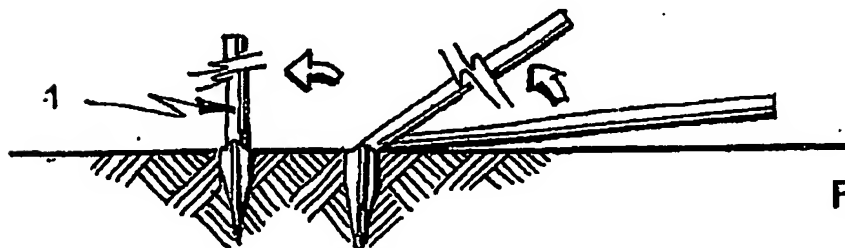


FIG. 12

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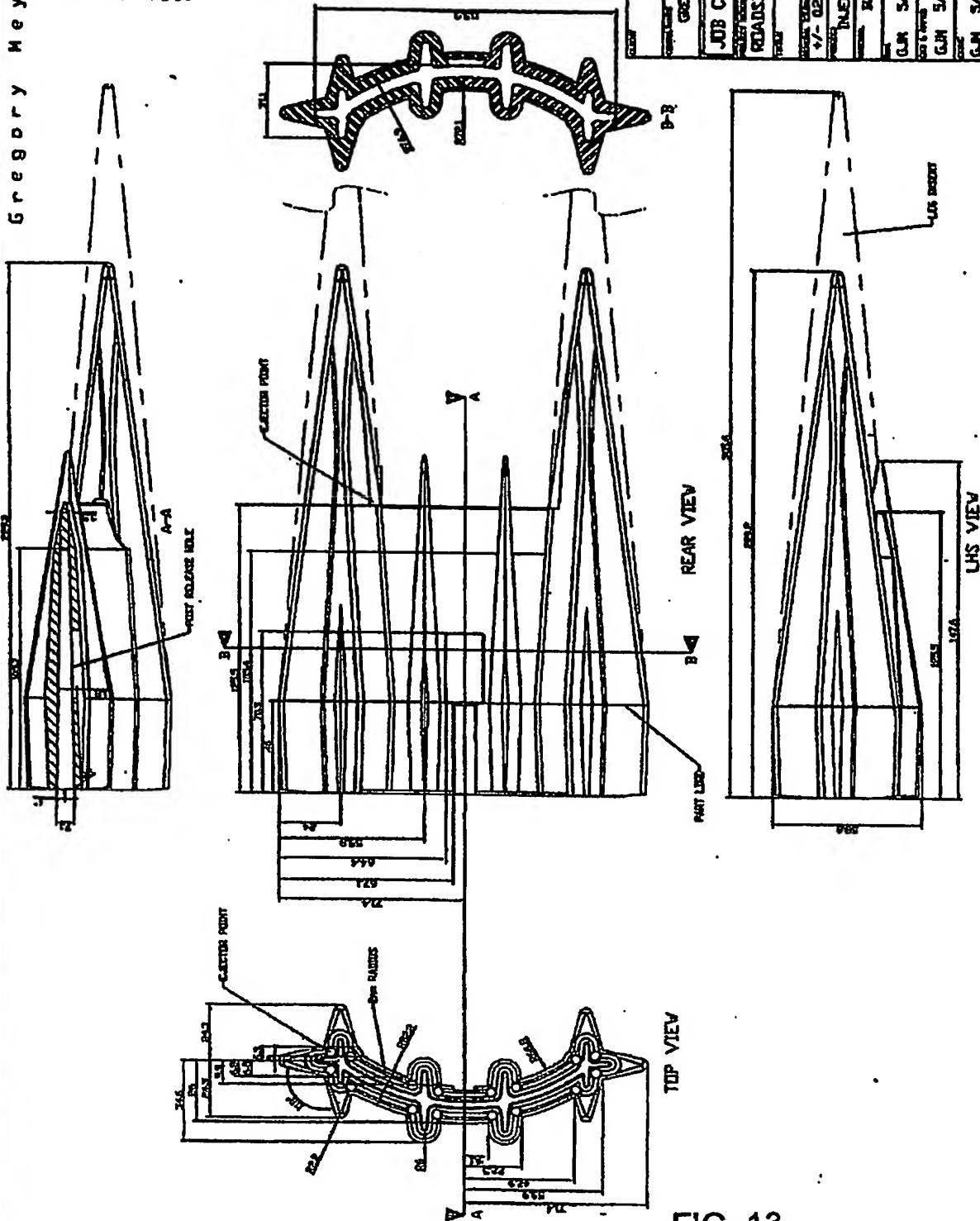


FIG. 13

[illegible]

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